

Remarks

In the August 20, 2008 office action, the Examiner rejected Claims 1-28 as unpatentable
5 over Susnow et al. (US Publication No. 2002/0159385) (hereinafter "Susnow") in view of Ebata
(US Publication No. 2003/0174652) (hereinafter "Ebata") under 35 USC 103(a).

Applicant has amended Claims 1-8 and 10-24 to further clarify the invention. Claims 9
and 25-28 are cancelled, without prejudice. Claims 1-8 and 10-24 are now pending, of which
Claims 1, 5, 11 and 18 are independent claims. Applicant respectfully requests allowance of the
10 pending claims based on the remarks below.

Rejection Under 35 USC § 103(a)

The Examiner rejected Claims 1-28 as unpatentable over Susnow and in view of Ebata
under 35 USC 103(a) . Applicant overcomes the rejection based on at least the reasons given be-
low.

Claim 1:

The combination of Susnow and Ebata fails to disclose a "method for processing fibre
channel frames, comprising:

- (a) providing a plurality of virtual lanes to a fibre channel switch element having a
plurality of ports, each of the virtual lane configured to transmit one or more
20 frames between a source and a destination;
- (b) receiving a fibre channel frame at a receive segment of one of the plurality of
ports of the fibre channel switch element;
- (c) determining a hop count for the frame based a destination identifier value (D_ID)
included in a header of the fibre channel frame;

(d) assigning a virtual lane for the frame based on the determined hop count; wherein
if the frame is destined for another port of the fibre channel element, no virtual lane is
assigned

(e) determining if the assigned virtual lane has available credit to transmit the fibre
5 channel frame; and

(f) transmitting the fibre channel frame using the assigned virtual lane, if credit is
available.” (Amended Claim 1, Underlines showing additions).

The Examiner relies on Susnow to disclose a method of a switch element for processing
fibre channel frames (Para. 24) comprising assigning a first virtual lane to a frame (Para. 38),
10 determining if the assigned virtual lane has a credit (Para. 49) and transmitting a frame if a credit
is available (Para. 38, last five lines). The Examiner further relies on Susnow to disclose that vir-
tual lanes correspond to a source and a destination. (Para. 46, lines 1-4) (See Office Action Page
3, Section 3)

The Examiner admits and Applicant agrees that Susnow does not disclose assigning vir-
15 tual lanes based on a hop count. The Examiner relies on Ebata to disclose “queuing” based on a
hop count (Para. 9). Further, the Examiner indicates that it would have been obvious to one
skilled in the art at the time the invention was made to have a virtual lane (i.e., queue) based on a
hop count in order to provide a fair transmission of packets based on their traveled distance
(Ebata, paras. 7-8) (See Office Action Page 3, Sections 4).

20 The Examiner also admits that Susnow does not disclose receiving the frames at a fibre
channel switch element. However, the Examiner indicates that Susnow discloses an intermediate
switch for receiving data according to a virtual lane (para. 29). The Examiner additionally indi-
cates that Ebata discloses queuing by hop count at an intermediary device (Fig. 7). The Examiner

concludes that it would have been obvious to one skilled in the art at the time the invention was made to receive data at a switch and transmit the data based on a virtual lane assigned by hop count in the invention of Susnow in order to provide a fair transmission of packets based on their traveled distance (Ebata, paras. 7-8) (See Office Action Page 3, Section 5). Applicant respectfully
5 fully disagrees.

Susnow is unrelated to assigning a virtual lane for the frame based on hop count that is based on a destination identifier (D_ID), as articulated in amended Claim 1. Applicant respectfully submits that Susnow is only concerned about a link level packet control mechanism utilized to prevent loss of data packets due to receive buffer overflow at either end of a transmission link.
10 (See Susnow, Paragraph [0001]). Susnow discloses a link level flow control mechanism that utilizes an “absolute” credit based flow control scheme where the receiver on one end of the physical link provides a “credit limit” indicating the total amount of data that the remote transmitter on the other end of the physical link is authorized to send since link initialization. The remote transmitter does not send data packets unless the receiver indicates that it has room to accept such data packets. (See Susnow, Paragraph [0048])
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Applicant also disagrees with the Examiner’s reliance on Ebata because Ebata does not disclose the use of hop count for assigning virtual lanes at a receive segment of a switch port. Ebata discloses a **wireless system** for a multi-hop network and is concerned about multi-hop networks where if the packet size is fixed, it is not capable of guaranteeing maximum throughput
20 for all hop count numbers, resulting in a “throughput gap” among routes of different hop counts. (Ebata Paragraph [0006]). Ebata attempts to maximize the throughput for each route by **segmenting data** into packets of different sizes according to the hop count number of the route. The **source node determines a packet size that corresponds to the hop count number** by refer-

encing the mapping table. The user data is segmented according to the packet size. The segmented data is packetized and transmitted. (See Ebata Fig. 6 and Paragraph [0008] and Paragraph [0035]). Amended Claim 1 is unrelated to segmenting data into different sizes based on hop count because the process in amended Claim 1, assigns a virtual lane based on the hop count
5 determined from a D_ID.

In conclusion, Ebata is only concerned about “throughput gap” among routes of different hop count for fixed packet sizes and suggests choosing a packet size based upon hop count and segmenting the data into appropriate packet size based on the hop count. Ebata simply discloses **a single queue** in a **wireless system**, segments the data into appropriate packet size based on the
10 hop count and schedules packet transmission based on the hop count of the packet. Ebata fails to disclose the concept of a plurality of dedicated virtual lanes, where each virtual lane is assigned to a frame based on a frame’s hop count.

Based on the foregoing, the combination of Ebata and Susnow is different from amended Claim 1.

15 Furthermore, there is no motivation or suggestion to combine the teachings of Susnow with Ebata. The Examiner is reconstructing Applicant’s claimed invention based on impermissible hindsight.

Non-Analogous Art:

20 Ebata should not be combined with Susnow because it is non-analogous art. Ebata is unrelated to processing fibre channel frames. Ebata is also unrelated to the problem that Applicant intends to solve, i.e., reduce deadlock in a fibre channel fabric.

Teaches Away:

Ebata uses a single queue and sends a packet with higher hop count before sending packet with lower hop count. This system is prone to deadlock, if for some reason a packet with higher hop count cannot be sent. In contrast, Applicant's pending Claim 1 at least in part, includes providing a plurality of virtual lanes, assigning a virtual lane for the frame based on a hop
5 count for the frame and transmitting the frame using the assigned virtual lane, if credit is available. Therefore, Applicant respectfully submits that Ebata is teaching away from Applicant's claimed invention.

Based on the foregoing reasons, Ebata fails to cure the deficiencies of Susnow. Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose amended
10 Claim 1. Applicant respectfully requests allowance of Claim 1.

Claim 5

Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose Claim 5, at least based on the same reason provided above with respect to Claim 1. For brevity, Applicant has not reproduced the arguments previously made with respect to Claim 1.

15 Applicant respectfully request allowance of Claim 5.

Claim 11

Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose Claim 11, at least based on the same reason provided above with respect to Claim 1. For brevity, Applicant has not reproduced the arguments previously made with respect to Claim 1.

20 Applicant respectfully request allowance of Claim 11.

Claim 18

Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose Claim 18, at least based on the same reason provided above with respect to Claim 1. For

brevity, Applicant has not reproduced the arguments previously made with respect to Claim 1.

Applicant respectfully request allowance of Claim 18.

Claims 2-4

Claims 2-4 depend directly or indirectly from Claim 1. Therefore, Claims 2-4 are patentable for at least the same reasons given above with respect to Claim 1. Applicant respectfully requests allowance of Claims 2-4.

Claims 6-8 and 10

Claims 6-8 and 10 depend directly or indirectly from Claim 5. Therefore, Claims 6-8 and 10 are patentable for at least the same reasons given above with respect to Claim 5. Applicant respectfully requests allowance of Claims 6-8 and 10.

Claims 12-17

Claims 12-17 depend directly or indirectly from Claim 11. Therefore, Claims 12-17 are patentable for at least the same reasons given above with respect to Claim 11. Applicant respectfully requests allowance of Claims 12-17.

Claims 19-24

Claims 19-24 depend directly or indirectly from Claim 18. Therefore, Claims 19-24 are patentable for at least the same reasons given above with respect to Claim 18. Applicant respectfully requests allowance of Claims 19-24.

Conclusion

For the foregoing reasons, Applicant believes that Claims 1-8 and 10-24 are allowable,
and a notice of allowance is respectfully requested. If the Examiner has any questions regarding
5 the application, the Examiner is invited to call the undersigned Attorney at (949)-955-1920

Respectfully submitted,

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